PUBLIC UTILITY PRICING, DEBT FINANCING, AND CONSUMER WELFARE

Remarks by

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The financial problems of public utilities were suddenly thrown into sharp focus earlier this spring. On April 23, the Consolidated Edison Company (serving approximately half the population of New York State) omitted its dividend for the first time in nearly 90 years. On the same day, a major private rating agency (Standard and Poor's Corporation) reduced its rating of the company's bonds from BBB to BB—a classification making them ineligible as legal investments for fiduciary financial institutions in New York State. So strained was Consolidated Edison (Con. Ed.) that it had to appeal to the State for emergency assistance. In the closing hours of this year's legislative session, a sum of $500 million of State aid was provided through the purchase of two of the Company's generating stations still under construction (on which the State must spend another $300 million to complete the projects).

In the wake of Con. Ed's difficulties, the market value of public utility stocks generally declined appreciably. Quite a few of the privately-owned firms found it difficult—if not impossible—to sell long-term debt to finance the expansion of capacity and to install pollution abatement equipment. While regulators, investment analysts, and private investors had been uneasy about utilities for some time, a number of consumer group spokesmen also broadened the discussion of the future of public utilities.

For quite a few months, some of us in the Federal Reserve System have also been concerned with the growing difficulties being encountered by public utilities.[1] Among these difficulties, their deepening financial problems are particularly troublesome. Unless they are able to overcome these financing obstacles in the next few years, consumers are likely to bear the real costs of such failure in the form of energy shortages, much higher prices, and severe constraints on the improvement of consumer welfare.

Given this prospect, I decided to explore the subject again. Specifically, I wanted to know the nature and magnitude of the financing problem which the utilities will face over the next few years—and not simply its longer-run dimensions. I also wanted to know the extent to which the regulators of public utilities—at the Federal, State, and local levels—appreciate the scope of the financing difficulties and are responding to the need to assure a sounder financial base. To obtain insights into the way in which the regulatory process is working under present circumstances, I asked the 12 Federal Reserve Banks to make an informal survey of the situation in their Districts. The results of that canvass are reported on here. Finally, I wanted a clearer picture of the consequences for consumer welfare of the differential pricing practices generally followed by electric and gas utilities.

* I am indebted to a number of persons for assistance in the preparation of these remarks. At the Board, Mr. James Kichline had general oversight of the staff effort, Mrs. Helen S. Tice had responsibility for the assessment of public utility pricing practices, and she also analyzed (with the help of Mr. John Austin) the responses to the informal survey of utilities' rate adjustment experience conducted by the Federal Reserve Banks. At each Bank, at least one economist carried out this task, and I am indebted to each of them. Mrs. Margaret H. Pickering helped with the assessment of utilities' financing problems. Mrs. Ruth Robinson calculated the unit costs of utility services to different categories of customers. Several members of the staff of the Federal Power Commission were particularly helpful through sharing data and discussion of issues with the Board's staff.

However, the views expressed here are my own and should not be attributed to others.

[1] See my paper entitled "Economic Growth and Environmental Protection: Cost Elements in Pollution Abatement" presented at a Symposium at the 47th National Mayo Alumni Meeting, Rochester, Minnesota, October 12, 1973. See also the speech by Governor Robert C. Holland, "Public Policy Issues in the Financing of New Energy Capacity," presented before the Financial Conference of the National Coal Association, Chicago, Illinois, October 31, 1973.

These issues are analyzed in some detail in the rest of this paper. The highlights can be summarized here:

In the last decade—but especially in the last year—inflation has had a severe impact on public utilities. Their fuel costs have risen beyond the expectations of the most pessimistic forecasters, and their earnings have continued to deteriorate. They have had to finance a greatly increased volume of capital investment (a sizable proportion of which was required for pollution abatement) during a period in which their cash flow was depressed, and cost of both debt and equity funds was rising.

The normally long lead time required for new construction has been lengthened further by delays necessitated by the filing of environmental impact statements. Moreover, the growth of consumer awareness has added new pressures against increases in utility rates—despite the rising costs of providing service.

Over the last few years, the ability of public utilities to raise funds in the capital market has deteriorated appreciably. A substantial number of firms are not earning enough to cover their interest cost to the extent investors normally find appealing (typically a 2-to-1 earnings-cost ratio). This means that they are effectively barred from floating long-term debt. Some utilities have also experienced difficulty in rolling over commercial paper. Consequently, a growing proportion of utilities have found it necessary to rely temporarily on short-term bank credit.

Moreover, a significant number of these firms have had their bond rating lowered or suspended. For example, the number of adverse rating actions in the first 4½ months of this year exceeds those occurring in all of 1972 and 1973.

The results of an informal survey of public utilities undertaken by the Federal Reserve Banks earlier this month suggest that the regulatory process has not been accelerated—despite the severity of the financial problems which these firms face. Of the nearly 100 utilities contacted, over 80 per cent have sought rate relief within the last year. Just under half of the requests were granted in full; another one-seventh were granted either in part or on an interim basis, and two-fifths were still pending.

The time typically required for the resolution of a request for a rate adjustment apparently has not been shortened significantly—if at all. While the time lag varies widely among the States, it averages from 9-12 months. If lags are not too long, the rate adjustments are often too small.

The majority of respondents reported automatic rate adjustments for fuel costs and purchased electricity as well. In many cases, such clauses had applied to nonresidential customers for some years, and the procedure was extended to all customers recently. Nevertheless, while these clauses help somewhat in cushioning the impact of escalating fuel costs, these schemes vary considerably in the speed with which a cost increase is reflected in a rate increase.

As I weigh the financial situation faced by public utilities, I am personally convinced that they are—in fact—confronted by genuine difficulties. At the same time, however, I do not believe these difficulties will lead to a parade of utilities to their respective State legislatures to seek emergency assistance—as one large company had to do in New York State. Instead, I am personally convinced that a more sympathetic—and timely—response of regulators to requests for rate adjustments will enable the vast majority of firms to cope with their problems.

On the other hand, I believe that—before too long—utilities ought to give serious attention to efforts to correct the historic pattern of pricing which favors large commercial or industrial users with lower rates than are charged residential or small commercial customers. For example, in 1972, the residential electric consumer paid over twice as much per kilowatt hour as the large commercial customer. In the same year, residential gas consumers paid a rate over 2½ times as high as the industrial consumers.

While recognizing that there are some physical efficiencies in delivering energy to large users, I believe these quantity discounts are no longer consistent with our long-run need to conserve energy resources. I personally think it would be better to replace the existing system of pricing with a structure that puts much more emphasis on peak loan rate differentials for both time of day and season of the year. This scheme would have little impact on industrial users, and there would be a tendency to redistribute costs of electric use toward affluent residential users.

In the meantime, we as a society must give careful consideration to the way in which we are to allocate our scarce energy resources. Moreover, we should all accept the fact that this growing scarcity will mean higher prices for energy relative to most other items on which consumers can spend their income. In the long-run, it is better to permit these increases in real costs to be passed on to final users—rather than pretend that we can—somehow—escape the burden. Only in this way will consumer welfare be truly served in the years ahead.

Changing Perception of the Problem of Public Utilities In October, 1964, the Federal Power Commission (FPC) released its report on the National Power Survey which it initiated in 1962. This Survey, the first comprehensive study of the electric power industry as a whole, pointed out efficient patterns of development and coordination in electric power generation among all segments of the industry which might be attainable during the 1970's. In retrospect, it exhibits the optimism which prevailed a decade ago. The report is filled with chapters such as the one entitled "A History of Industrial Growth and Cost Reductions" as well as exhortations such as ". . . The challenge facing the electric power industry is to continue the long-term trend of selling electricity to the consumer at steadily lower prices. . . ."[2] The concluding chapter was titled "Outlook for Cost Reductions." However, the matter of sources of financing for the projected growth in capacity was barely discussed—except to point out that the internal funds of investor-owned companies were accounting for an increasing share of the funds for capital expansion.

In 1972, the Commission issued another Power Survey report covering the period 1970-1990. The

[2] Volume I, page 5.

world as viewed in this Survey seemed different indeed from that which had been promised only a few years before. For example, the FPC now

> . . . estimated that the recent reversal in the historical downward trend in the real cost of electric service will be carried into the future. . . . (Volume I, page I-19-1.)

It also observed that:

> . . . When the first National Power Survey was published in 1964 . . . electric power companies had little trouble raising the funds needed to modernize and expand their plant. Today this is far from the case. . . . (*Ibid.*, page I-20-1.)

The recent Power Survey contained an entire chapter from the perspective of 1970 on the industry's financing problems anticipated for the period of tremendous expansion projected for the following two decades. In general, its tone was guardedly optimistic about the industry's ability to raise these substantial sums in the capital markets.

Unfortunately, events seem once again to have overtaken the forecasters. Within the last year, fuel costs have risen beyond the expectations of even the most pessimistic of forecasters of a few years ago. Interest rates have remained high and show little prospect of falling. The rate of inflation has accelerated, and utility earnings have continued to deteriorate. The scholarly as well as the popular literature abounds with articles on the ill-health of the utility industry in general and of many companies in particular. Many firms have been forced to issue stock since earnings have been insufficient to meet the interest coverage requirements in existing bond indentures.

The sources of these problems are not difficult to isolate. Capital outlays have been substantial since 1965—a period in which investment was virtually stagnant in other sectors. Furthermore, this expansion had to be financed during a period in which the utilities' cash flow was depressed, and the cost of both debt and equity capital was rising. As each increase becomes imbedded into the industry's cost structure, further upward pressure on the cost of funds is exerted.† Inflation has taken its toll as well. Construction costs have risen, fuel costs have risen, and part of the rise in interest rates is attributable to an inflation premium. Costs of pollution abatement also enter into both operating and construction expenses. Clean fuels are in relatively short supply—and therefore costly—and the emission control equipment incorporated into plants is also expensive. The long construction periods for new capacity have been lengthened further by the delays caused by the required filings of environmental impact statements and the challenges of an increasingly environmentally conscious public. Finally, in addition to the lags already existing in the regulatory process, the growth of consumer awareness has added new pressures for keeping rates from rising rapidly if at all—although the consumer price index (CPI) reports increases averaging 5 per cent per year in gas and electric costs in the last two years.

Financial Developments Since 1964 The year 1965 saw the peak of popularity for utility stocks; since then price-earnings (P/E) ratios have fallen, interest rates have risen, and the financial picture of the sector has deteriorated. In 1968 and 1969, interest rates had risen sufficiently to elicit articles in one of the leading publications (*Public Utilities Fortnightly*—hereafter cited as *P.U.F.*) calling for more sophisticated and yield-conscious techniques of cash management[3] or for the use of short-term instruments for financing in a period of high interest rates.[4] The legacy of such activities is perhaps to be found in the low level of liquidity in the utility sector and in the bulge in the financing calendar in 1975 when the five-year notes of 1970 come due. Currently some observers are advocating off-balance sheet financing (leasing, primarily) as a way of making the industry's securities more attractive to the investing public.[5] Other observers, however, point out that the adoption of lease capitalization as an accounting principle by the Securities and Exchange Commission (SEC) will dissipate the advantage very rapidly.

Some of the industry's financial problems can be traced in the statistical tables included in this paper. These tables have been assembled from a variety of sources which do not seem to possess a high degree of consistency with one another. Unfortunately, time did not permit us to engage in any elaborate attempts at reconciliation. But whatever the differences in data, they all tell essentially the same story.

Tables 1, 2, and 3 show the utility component of the principal bodies of aggregate data on sources of funds which have been incorporated into the Flow of Funds accounts compiled by the Federal Reserve Board's staff. These are data showing the profits and cash flow series compiled by the Bureau of Eco-

† Earnings must be larger to cover the additional fixed charges, and price-earnings (P/E) ratios and the yields required to market new bond issues are also likely to increase.

[3] R. W. Jackson, "Cash-Balance Sheet Bonanza," *P.U.F.*, 2/1/68.

[4] A. G. Mitchell, "New Trends in Utility Financing," *P.U.F.*, 12/18/69.

[5] P. L. Kintzell, "Leasing in the Electric Utility Industry and How to Account for It," *P.U.F.*, 3/28/74.

nomic Analysis (BEA) in the Department of Commerce; the SEC security issue series; and the SEC Corporate Working Capital series. Tables 4, 5, and 6 are based largely on aggregate data for investor-owned gas utilities compiled by the American Gas Association and investor-owned class A and B electric utilities compiled by the FPC.[6] Again, the focus is on sources of funds, capital outlays, and rates of return.

Both sets of data indicate a growing shortfall of internal funds relative to capital expenditures. Moreover, the problem is much more acute for electric than for gas utilities which have somewhat higher rates of return. In the case of external financing, both sets of data again point up the growing share of utilities in long-term securities offered in the capital market.[7] When one examines liquidity ratios, it is easy to see why this volume of external financing was required quite apart from the massive capital outlays. Even more than nonfinancial business as a whole, utilities have exhibited the decline in holdings of short-term assets relative to short-term liabilities which has characterized the last 20 years. Once again the problem is more severe for electric than for gas utilities. Furthermore, much of the 1973 growth in the current assets of utilities is attributable to substantial increases in inventory book values and receivables. Bank credit and short-term securities (probably commercial paper) account for most of the even larger increase in current liabilities.

The capital structure of both electric utilities and gas utilities other than pipelines has shifted from common equity to debt over the period. However, for gas transmission companies, the reverse is true. Unfortunately, it is not possible to separate their security issues from the aggregate. Finally, interest coverage has declined—again less so for gas pipelines than for the others—and the average interest rate imbedded in the debt structure has drifted up. Not surprisingly, the net return on common equity has fallen throughout for electric utilities, risen slightly for pipelines, and fallen and then improved again for other gas utilities during the period 1964-1973.

[6] One major source of disparity between the two sets of estimates of retained earnings is attributable to differences in depreciation accounting. The BEA bases the national income accounts on tax definitions of depreciation and earnings, while utility regulatory reports incorporate straight-line techniques. In fact, any use they make of accelerated depreciation is included under "deferred taxes."

[7] The two components series sum to more than the SEC aggregates, however. This phenomenon can be explained in the case of debt by the fact that the SEC series is limited to bonds while the industry series include other forms of debt as well. No such convenient answer is at hand for the equity series.

Table 1

ELECTRIC, GAS, AND SANITARY SERVICES: INTERNAL FUNDS AND CAPITAL OUTLAYS

($ Billions)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973[e]
1. Profits before tax	4.6	4.7	5.0	4.8	4.8	4.7	4.1	4.1	4.5	5.0
2. Profits tax	2.1	2.1	2.2	2.1	2.2	2.2	1.9	1.7	1.7	1.9
3. Profits after tax	2.5	2.6	2.8	2.7	2.6	2.5	2.2	2.3	2.8	3.1
4. Dividends	2.1	2.3	2.4	2.5	2.7	2.8	3.0	3.3	3.6	3.8
5. Undistributed profits	.4	.4	.4	.2	—.2	—.3	—.9	—1.0	—.9	—.7
6. Capital consumption	2.9	3.1	3.3	3.6	3.9	4.4	4.8	5.4	6.1	6.6
7. Cash flow	3.3	3.5	3.7	3.8	3.8	4.0	3.9	4.4	5.2	5.9
8. Inventory Valuation Adjustment	*	*	—.1	*	*	—.2	—.4	—.1	—.2	—.5
9. Cash flow and IVA	3.3	3.5	3.7	3.7	3.7	3.9	3.5	4.4	5.0	5.4
10. Capital outlay	5.5	6.1	7.4	8.7	10.2	11.6	13.1	15.3	17.0	18.7
11. Capital outlay less internal funds	2.2	2.7	3.8	5.0	6.5	7.8	9.7	10.9	12.0	13.3
12. Net interest	1.3	1.4	1.6	1.8	2.1	2.6	3.2	3.9	4.5	5.0
13. Memo: interest coverage ratio before tax	4.40	4.27	4.18	3.64	3.25	2.80	2.28	2.06	2.00	2.00

[e] FRB estimates except for line 10.

Source: Lines 1-8, and 12 from the Survey of Current Business, July issues, Tables in Section 6. Line 10, S.C.B., "Plant and Equipment."

Table 2

SECURITY ISSUES AND NET CHANGE IN OUTSTANDINGS

($ Billions)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Issues										
Debt										
All industries	10.7	12.7	15.6	21.3	19.4	19.5	29.5	31.9	27.1	21.5
Public utilities	2.1	2.1	3.3	4.2	4.3	5.2	7.8	7.5	6.2	5.5
Equity										
All industries	3.7	3.2	4.2	4.7	6.1	9.3	9.2	14.8	15.2	13.6
Public utilities	.6	.6	.6	.7	.9	1.4	2.9	4.2	5.0	4.7
Net change										
Debt										
All industries	6.6	8.1	11.1	16.0	14.0	13.8	22.8	23.7	19.1	12.7
Public utilities	1.4	1.3	2.7	3.4	3.7	4.5	6.9	6.5	5.1	4.3
Equity										
All industries	1.4	*	1.2	2.3	—.9	4.3	6.8	13.5	13.0	10.6
Public utilities	.5	.1	.5	.7	.9	1.4	2.9	4.2	4.8	4.5

Source: SEC **Statistical Bulletin**, various issues. "Public utilities" covers electric, gas, water, and other companies.

Table 3

END OF YEAR LIQUIDITY: RATIOS TO TOTAL CURRENT LIABILITIES

(In per cent)

	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973
Total current assets										
Electric utilities	103.1	92.6	95.5	87.5	79.4	70.3	72.4	76.9	82.8	73.3
Gas utilities	105.0	101.6	88.8	90.4	87.4	85.8	100.8	103.4	102.7	96.5
All nonfinancial business	195.1	188.0	182.6	182.7	174.7	164.5	161.5	165.3	166.2	163.5
Cash and Governments										
Electric utilities	31.9	25.8	24.3	18.6	16.3	13.4	12.3	13.0	14.3	9.6
Gas utilities	26.3	24.7	20.9	19.1	17.0	14.3	18.0	16.6	18.5	13.7
All nonfinancial business	35.9	32.0	27.5	26.4	24.4	20.3	19.0	21.2	20.8	19.6
Cash, Governments and other current assets										
Electric utilities	42.4	34.8	35.2	27.1	24.6	20.8	20.4	20.9	21.4	15.5
Gas utilities	34.5	33.7	29.7	26.3	23.1	19.8	29.6	26.8	28.3	22.7
All nonfinancial business	46.3	42.1	37.4	36.8	35.5	31.3	30.5	33.8	33.7	32.4

Source: Calculated from data in SEC **Statistical Bulletin**, "Working Capital of U. S. Corporations" and unpublished detail.

Table 4

CAPITAL OUTLAYS AND FINANCING OF INVESTOR-OWNED GAS AND ELECTRIC UTILITIES

($ Millions)

	1964	1965	1966	1967	1968	1969	1970	1971	1972
Gas utilities									
Internal funds	1137	1169	1228	1329	1331	1528	1556	1829	2085
Retained earnings	331	326	330	407	356	472	421	536	660
Deferred taxes	61	45	48	23	18	22	34	95	135
Depreciation	745	798	850	899	957	1034	1101	1198	1290
External funds	1812	1729	1967	2930	2761	3444	6030	6993	6809
Common	167	99	110	59	143	458	746	1283	1306
Preferred	215	325	201	266	258	268	621	960	1162
Debt	1530	1305	1656	2605	2359	2718	4664	4749	4340
of which notes	38	40	58	42	230	294	264	643	753
Capital outlays	1510	1700	2050	2000	2540	2670	2490	2440	2520
Electric utilities									
Internal funds	2352	2415	2634	2791	2906	3181	3395	3849	4502[e]
Retained earnings	712	689	811	842	797	884	886	1026	1250[e]
Deferred taxes	65	51	49	55	75	94	110	196	346[e]
Depreciation	1575	1675	1774	1894	2034	2203	2399	2627	2906[e]
External funds	1713	1784	3039	3618	4260	4817	8247*	9299	8679[e]
Common	661	379	287	523	623	864	1363*	1762	2000[e]
Preferred	43	142	340	465	476	401	1145*	1750	2004[e]
Debt	1008	1261	2411	2630	3161	3552	5739*	5787	4675[e]
of which short-term	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	—*	133	n.a.
Capital outlays	3970	4430	5380	6750	7660	8940	10650	12860	14480

* Note apparent series break.

Source: Capital Outlay, BEA series. *Others:* AGA and FPC data. Electric before 1970 from **1970 Power Survey**, Table 20.2, and 1972 estimated from Edison Electric Institute data.

Table 5

CAPITAL STRUCTURE OF INVESTOR-OWNED ELECTRIC AND GAS UTILITIES

(In per cent)

	1964	1965	1966	1967	1968	1969	1970	1971	1972
Electric									
Long-term debt	51.8	51.5	52.3	53.0	53.8	54.6	54.8	54.2	53.1[e]
Preferred	9.6	9.5	9.5	9.6	9.6	9.4	9.8	10.7	11.8[e]
Common	38.6	39.0	38.2	37.4	36.6	36.0	35.4	35.1	35.0[e]
Gas transmission									
Long-term debt	59.8	58.8	58.1	56.8	57.7	57.8	57.1	56.6	55.7
Preferred	8.7	8.4	8.9	9.2	8.6	8.8	8.5	7.0	7.0
Common	31.6	32.9	33.1	34.0	33.7	33.4	34.4	36.4	37.3
Other gas utilities									
Long-term debt	44.9	50.0	50.7	51.0	51.0	51.9	53.0	53.2	53.0
Preferred	7.1	6.4	6.2	6.1	6.1	5.7	5.6	6.3	6.5
Common	48.0	43.6	43.1	42.8	42.8	42.4	41.4	40.5	40.5

Source: Electric companies from FPC **Statistics of Privately Owned Electric Utilities in the United States.** 1972 estimated from Edison Electric Institute data.

Gas companies: American Gas Association, **Gas Facts**, 1972, and earlier years.

Table 6

SELECTED STATISTICS FOR INVESTOR-OWNED GAS AND ELECTRIC UTILITIES

(In per cent)

	1964	1965	1966	1967	1968	1969	1970	1971	1972
Before tax interest coverage Interest on long-term debt									
Electric	5.33	5.31	5.17	4.74	4.35	3.89	3.49	3.11	2.98[e]
Gas transmission	3.55	3.62	3.69	3.61	3.49	3.53	3.05	3.08	3.12
Other gas utility	5.91	5.57	5.28	5.12	5.02	5.06	4.07	3.61	3.55
Total interest									
Electric	5.11	5.08	4.87	4.43	4.01	3.47	3.12	2.89	2.79[e]
Gas transmission	3.30	3.29	3.23	3.11	3.01	2.79	2.58	2.81	2.88
Other gas utility	5.26	5.00	4.67	4.46	4.20	4.02	3.42	3.28	3.27
Net return on common									
Electric	12.3	12.6	12.8	12.8	12.3	12.2	11.8	11.7	11.8[e]
Gas transmission	12.9	12.3	13.0	14.1	13.9	14.6	12.2	13.3	13.6
Other gas utility	12.5	12.7	12.6	12.9	11.7	12.6	12.3	12.6	12.8
Average interest on long-term debt									
Electric	3.7	3.8	3.9	4.0	4.3	4.6	5.1	5.5	5.8[e]
Gas transmission	4.8	4.6	4.8	5.0	5.4	5.6	6.1	6.7	6.8
Other gas utility	4.9	4.5	4.3	4.4	4.4	4.5	5.4	5.8	6.1
Current ratio*									
Electric	.973	.862	.894	.841	.786	.692	.728	.743	.763[e]
Gas transmission	1.014	.792	.653	.670	.624	.613	.701	.871	.819
Other gas utility	.856	.870	.849	.832	.797	.729	.801	.885	.899

Source: See Tables 4 and 5.

* Natural numbers.

Recent Utility Financing Problems As indicated above, the ability of public utilities to raise funds in the capital market has deteriorated appreciably in recent years. At this point, it might be helpful to take a closer look at the extent of the deterioration.

Interest Coverage: At the end of 1971 (the latest date for which complete data are available), interest coverage ratios for electric utilities (shown in Table 7) indicated that roughly one-tenth of the companies were for all practical purposes precluded from long-term borrowing in the public market. And more recently available information suggests some general further deterioration in these ratios. Pre-tax earnings coverage of at least two times long-term interest charges appears to be the generally accepted lower limit tolerated in the market. In many cases, company mortgage indentures specifically restrict additional long-term borrowing when the pre-tax earnings fail to meet this test.[8]

The rating agencies also like to have a two times coverage for a Baa rating. There are exceptions, however. For example, Moody's recently gave an A rating to an electric utility with 1.75 times coverage since the low ratio did not reflect interim rate increases presently in effect and additional increases expected.

Maturing Debt: As shown in Table 8, about $8.2 billion of public utility bonds and notes will mature during the period 1974-78. Just over $1 billion is due this year, and $2½ billion matures in 1975. Over half of the public utility debt to be refunded during

[8] One electric utility contacted by the St. Louis Federal Reserve Bank reported such an experience. In 1972, the company had to resort to selling preferred stock and obtained long-term bank loans. After receiving rate relief, the company sold bonds in early 1974.

Table 7

INTEREST COVERAGE OF PRIVATELY OWNED ELECTRIC UTILITY COMPANIES, 1969-71[1]

Times interest earned before taxes

	Below 1.50	1.50-1.99	2.00-2.49	2.50-2.99	3.00-3.49	3.50-3.99	4.00-4.49	4.50-4.99	5.00 & Above	Total
					(Number of Companies)					
1971	9	10	41	41	39	18	14	10	15	197
1970	7	6	39	39	30	25	12	16	20	194
1969	8	2	18	31	30	38	15	11	41	194

[1] The ratio is calculated using earnings before income taxes, and the credits of interest charged to construction have been treated as other income. The interest charges include interest on long-term debt, interest on debt to associated companies, and other interest expense.

Source: Federal Power Commission's **Statistics of Privately Owned Electric Utilities, 1971.**

this year and next year carries coupons of less than 4.00 per cent (shown in Table 9). The implications of refunding this debt at prevailing rates (even if one assumes that current pressures in money markets might ease) are quite obvious.

Ratings: Downgrading of utility bonds has accelerated sharply in recent weeks. Even if Consolidated Edison and the 5 related companies (included in Table 10 as "rating suspended") are excluded, the number of adverse rating actions thus far this year exceeds those occuring in all of 1972 and 1973. There have also been recent instances of lowering of municipally-owned utility ratings.

Information on downgrading of public utility commercial paper issuers is more sketchy. Moody's withdrew its rating for Consolidated Edison paper and downgraded 4 other utility issuers during April. The crucial question, however, is whether the Prime-2 and Prime-3 rated issuers are able to place new or roll-over outstanding paper. Reportedly, a number of these issuers are experiencing appreciable difficulty in doing so.

Table 8

MATURING PUBLIC UTILITY BONDS AND NOTES

(millions of dollars)

	1974	1975	1976	1977	1978	1974-1978
Jan.	48	153	14	22	48	
Feb.	12	97	53	193	194	
Mar.	89	144	145	86	167	
1Q	149	394	212	302	410	
Apr.	192	100	28	291	105	
May	62	151	158	57	53	
June	180	221	319	116	256	
2Q	434	471	506	463	414	
July	40	233	107	77	84	
Aug.	8	237	131	89	53	
Sept.	104	251	10	176	198	
3Q	152	721	248	342	335	
Oct.	121	654	298	39	78	
Nov.	202	175	72	233	88	
Dec.	109	14	149	276	100	
4Q	432	843	519	547	266	
Year	1,166	2,430	1,485	1,654	1,425	8,160

Includes: Issues of electric, gas and water utilities and telephone companies.

Source: Moody's **Public Utility Manual 1973.**

Changes in Dividends: Consolidated Edison of New York is the only notable public utility to omit a dividend this year. However, at least eight other electric utilities failed to earn their current dividend in the most recent earnings period. But they have announced "commitments to maintain dividends."

Recent Capital Market Financing Adjustments: In the last six or seven weeks, there have been numerous instances of public utility borrowers revamping their financing plans to meet rapidly changing market conditions. Adjustments in plans and temporary delays in order to obtain fairly prompt accommodation in the capital markets rather than indefinite postponements seem to be the more frequent occurrence. Major utilities have reduced the size of their offerings; switched from stock issues to bond issues (following the sharp price drop in utility stocks after the Con. Ed. dividend omission); reduced maturity of issue from long-term to intermediate-term; switched from competitive to negotiated bidding—and (in at least one case) arranged alternative long-term bank financing.

Table 9

MATURING PUBLIC UTILITY BONDS AND NOTES

(millions of dollars)

	Coupon on Maturing Issues — Per cent											
	1.00-1.99	2.00-2.99	3.00-3.99	4.00-4.99	5.00-5.99	6.00-6.99	7.00-7.99	8.00-8.99	9.00-9.99	10.00-10.99	No Coupon	Total
1974	—	129	545	24	6	—	75	284	53	50	—	1,166
1975	—	823	520	20	13	*	1	738	314	—	1	2,430
1976	—	573	182	61	10	35	225	332	68	—	—	1,485
1977	—	402	545	93	116	298	166	25	10	—	—	1,654
1978	—	60	794	93	82	247	150	—	—	—	—	1,425
1974-78	—	1,987	2,586	291	227	580	617	1,379	445	50	1	8,160

Includes: Issues of electric, gas and water utilities and telephone companies.

Source: Moody's **Public Utility Manual 1973.**

Table 10

CHANGES IN PUBLIC UTILITY BOND RATINGS BY MOODY'S INVESTORS SERVICE[1]

Rating Prior to Change	1972-1973			1974 to date[2]			Electric Utilities[3] Ratings on May 1, 1974
	Lowered	Suspended or Withdrawn	Raised	Lowered	Suspended or Withdrawn	Raised	
Aaa	1	—	—	1	—	—	8
Aa	3	—	—	4	2	—	65
A	2	2	2	2	6	1	60
Baa	—	—	3	—	1	1	14
Ba or lower	—	—	2	—	—	—	1
	6	2	7	7	9[4]	1	148

[1] Includes electric, gas, water & gas pipeline companies, but not communication companies.

[2] January 1, 1974 through May 13, 1974.

[3] Includes only privately owned electric utility companies; excludes gas, water and gas pipeline companies.

[4] Includes Consolidated Edison of N. Y. and 5 related companies.

Source: Moody's **Bond Survey** and **Bond Record.**

Table 11

COMMON EQUITY AS PER CENT OF TOTAL CAPITALIZATION FOR ELECTRIC UTILITY COMPANIES

	Below 25.0	25.0-29.9	30.0-34.9	35.0-39.9	40.0-44.9	45.0-49.9	50.0-54.9	55.0-59.9	60.0-99.9	100.0	Total
	(Number of Companies)										
1971	4	4	75	50	19	17	10	3	14	13	209
1970	3	4	65	55	25	13	12	6	12	12	207
1969	4	7	56	62	16	14	16	7	13	12	207

Source: Federal Power Commission's **Statistics of Private Owned Electric Utilities in the United States, 1971.**

Table 12

NUMBER OF UTILITIES CONTACTED IN FEDERAL RESERVE BANK STUDY

Federal Reserve District	Utilities contacted (Number)	Gas	Electric	Combination Gas & Electric	Other
1. Boston	20	8	9	3	0
Connecticut	4	2	1	1	—
Maine	4	1	3	—	—
Massachusetts	3	1	2	—	—
New Hampshire	2	1	1	—	—
Rhode Island	4	2	2	—	—
Vermont	3	1	—	2	—
2. New York	5	1	3	1	—
3. Philadelphia	6	2	2	2	0
Pennsylvania	4	1	2	1	—
New Jersey	2	1	—	1	—
4. Cleveland	2	—	1	1	—
5. Richmond	9	2	4	3	—
Maryland	2	—	1	1	—
Carolinas	4	1	2	1	—
Virginia & W. Virginia	3	1	1	1	—
6. Atlanta	10	4	6	—	—
7. Chicago	7	2	1	4	—
Illinois	3	2	1	—	—
Indiana	1	—	—	1	—
Iowa	1	—	—	1	—
Michigan	1	—	—	1	—
Wisconsin	1	—	—	1	—
8. St. Louis	6	1	1	2	2
Missouri, Ill., Iowa	4	1	1	—	2[a]
Kentucky	1	—	—	1	—
Tennessee	1	—	—	1	—
9. Minneapolis	5	2	—	3	—
Minnesota, Dakotas	3	2	—	1[b]	—
Montana	2	—	—	2	—
10. Kansas City	12	2	6	3	1[c]
11. Dallas	8	3	5	—	—
12. San Francisco	8	1	4	3	—
Washington	1	—	1	—	—
Oregon	3	1	2	—	—
Arizona	1	—	—	1	—
California	3	—	1	2	—
Totals	98	28	42	25	3

[a] Pipeline.

[b] Principally electric.

[c] Pipeline and distribution company.

Table 11 provides figures on recent trends in common equity as a percentage of total capitalization of electric utility companies. However, while stock financing is attractive in terms of their balance sheets, this option is not currently a feasible alternative to bond financing for many of these companies since their common shares are selling below book value.

Utility Rates and the Regulatory Process As I indicated above, I wanted to get an appreciation of the extent to which the financial problems of public utilities can be traced to the "regulatory lag" as well as to inflation. Expressed simply, the regulatory lag is the time which must elapse between an increase in costs and the permission (and ability) to recoup it. Since most rates are based on past costs rather than projected expenditures, in an inflationary environment earnings would suffer—even if the pace of the regulatory procedure were to be accelerated.

To obtain some impression of the way in which the regulatory process is currently working—as far as public utility rate adjustments are concerned—I asked the 12 Federal Reserve Banks to make an informal telephone survey in their Districts.[9] The questions included in the inquiry were:

a. What regulatory bodies (State, local or Federal) have jurisdiction over the firm's rate applications, and is there overlapping authority?

b. Within the last year, has the firm requested a rate increase, and if so what was its disposition (including speed of decision).

c. Does the firm possess an automatic rate pass-through on changes in fuel and/or other costs?

The questions were sent to the Reserve Banks on May 7, 1974, with a response requested by May 14.

As Table 12 indicates, 98 utilities were contacted. Of these companies, 42 are electric utilities, another 25 are combination gas and electric utilities, 28 are gas distribution companies, and 3 are pipelines. New England accounts for more than one-fifth of the companies surveyed; the Kansas City, Atlanta, and Richmond Districts together contribute an additional 30 per cent, and the rest is distributed over the remaining Districts.

1. Regulatory Jurisdiction. With respect to regulatory authority, no district reported any problems

[9] In passing, it should be noted that these data were collected on the basis of a scientific sample. Thus, the figures quoted should not be viewed as necessarily representative of the U. S. utility scene. Nevertheless, I believe that they provide some insight into the current state of utility rates and regulations.

Table 13

NUMBER OF UTILITIES REQUESTING AT LEAST ONE RATE INCREASE WITHIN LAST YEAR

Federal Reserve District	Total Number	Type of Utility			
		Gas	Electric	Gas & Electric	Other
1. Boston	17	7	7	2	0
2. New York	5	1	3	1	0
3. Philadelphia	6	2	2	2	0
4. Cleveland	2	—	1	1	—
5. Richmond	8	1	4	3	—
6. Atlanta	7	3	4	—	—
7. Chicago	7	2	1	4	—
8. St. Louis	6	1	1	2	2
9. Minneapolis	5	2	—	3	—
10. Kansas City	8	2	4	2	0
11. Dallas	8	3	5	—	—
12. San Francisco	5	1	3	1	—
Total	84	25	35	22	2

with overlapping jurisdictions. Clearly utilities operating in more than one jurisdiction are subject to several regulatory bodies. In addition, the FPC regulates wholesale electric rates and interstate natural gas pipeline operations for those companies engaged in these activities. In most cases, the major regulatory body is a state commission, called by a variety of rather similar names.

There are a few areas in which local control is still the norm, however. This is frequently the case with municipal systems which are often under the control of elected officials—e.g., Memphis and Seattle —or under public power districts—e.g., Nebraska. In Massachusetts, municipal companies are subject to local regulatory boards, and in addition are subject to the state ceiling on the rate of return. In Texas, local bodies have jurisdiction, with the Texas Railroad Commission serving as arbiter in the event of a difficulty. Local control is being phased out in Minnesota effective the first of next year when the Public Service Commission will inherit full responsibility.

2. Rate Adjustment Proceedings. There is considerable variation among Districts in the extent to which regulatory lag, the perception of rate-makers, and general economic conditions are seen as problems. In general, the most pessimistic reports seem to come from the Chicago, Kansas City, St. Louis, and Cleveland Districts; the most satisfied from the Dallas and Atlanta Districts.

Tables 13 and 14 indicate the extent to which the companies have sought rate relief within the last year. Eighty-four of the companies had made at least one such application, with the First Federal Reserve District again accounting for more than 20 per cent of the total—and Kansas City and Richmond about 10 per cent each. The requests were distributed across the major types of utilities in about the same proportion as the number of respondents, with electric utilities representing nearly 42 per cent of the applicants. Turning to Table 14, it appears that of the 123 separate applications made by these companies, 46 per cent were granted in full, another 14 per cent were granted either in part or on an interim basis, while 40 per cent are still pending.

In the Middle West (perhaps for a variety of reasons), the regulatory climate appears to be rather unfavorable to prompt rate action. In Ohio, for example, delays of three years are not uncommon. Michigan currently bases its decisions on 1972 data, and intervenors add to the normal delay between application and granting which can be 9 months or more if the state government is involved. Illinois and Missouri must act within 11 months and generally avail themselves of the full time; Indiana's lag runs from 9 to 12 months. If lags are not too long, the rate adjustments are often too small. The Kansas City Bank reported this complaint of its respondents, many of whom had not had rate increases for many years. One utility in Kentucky (whose per share

Table 14

DISPOSITION OF RATE RELIEF APPLICATIONS

Federal Reserve District	Number made	Number granted in full	Number granted interim relief	Number pending
1. Boston	20	11	—	9
2. New York	7	2	1	4
3. Philadelphia	7	3	—	4
4. Cleveland	2	—	—	2
5. Richmond	14	2	10	2
6. Atlanta	7	5	—	2
7. Chicago	9	5	1	3
8. St. Louis	8	3	1	4
9. Minneapolis	15	10	—	5
10. Kansas City	15	8	2	5
11. Dallas	10	6	1	3
12. San Francisco	9	2	1	6
Total Number	123	57	17	49
Per Cent of Total	100	46	14	40

Table 15

NUMBER OF UTILITIES WITH FUEL COST PASS-THROUGH RATE ADJUSTMENTS

Federal Reserve District	Total Number	Type of Utility			
		Gas	Electric	Gas & Electric	Other
1. Boston	18	6	9	3	0
2. New York	5	1	3	1	—
3. Philadelphia	6	2	2	2	0
4. Cleveland	2	—	1	1	—
5. Richmond	9	2	4	3	—
6. Atlanta	10	4	6	—	—
7. Chicago	7	2	1	4	—
8. St. Louis	5	1	1	1	2
9. Minneapolis	4	2	—	2	—
10. Kansas City	12	2	6	3	1
11. Dallas	7	2[a]	5	—	—
12. San Francisco	5	1	1	3	—
Totals	90	25	39	23	3

[a] A third gas utility has such relief on an emergency basis.

earnings had fallen sharply) applied for relief in February of this year; it did not apply for interim relief because it believed that it would be turned down. This firm complained that a company had to suffer nearly 2 years—1 to justify the request and 1 to wait—of depressed earnings before any respite was observed.

For natural gas pipelines, the FPC must issue an order within 30 days, but it may then suspend the increase for 5 months. The Commission appears to use its full 6 months.

In other states, however, firms have better luck. The Dallas Reserve Bank reports that its respondents cited rather speedy approval—especially if the increase requested was small—and the delays which did exist were not said to hurt the companies. Lags seemed short in the Minneapolis District and not burdensome in Atlanta. The State of Virginia has an annual earnings review; and if a firm is found not to be earning the rate of return the State Corporation Commission approved a year before, it can increase its rates within 30 days, subject to a commission veto. Many states allow new rates to be put into effect before final approval of the regulatory authority. However, revenues are subject to refund should the decision be adverse, and in some instances they must be put in escrow.

3. Automatic Cost Pass-Throughs. Since so much of the Northwest electric generating capacity is hydroelectric, utilities in Washington and Oregon generally do not have such clauses. Otherwise, as Table 15 indicates, the majority of respondents reported automatic rate adjustments for fuel costs and purchased electricity as well. In many cases, such clauses had applied to nonresidential customers for some years, and the procedure was extended to all customers recently.

In addition, three companies in the Atlanta District can pass on local taxes, as can some companies in the Minneapolis Bank survey. Nebraska permits operating and maintenance costs to be passed on as well, and Illinois allows the pass-through of carrying costs on cash advances for gas exploration and R&D in coal gasification.

While these clauses help somewhat in handling the earnings squeeze induced by escalating fuel costs, the schemes vary considerably in the speed with which a cost increase is reflected in a rate increase.

General comments were not specifically solicited. But several Districts reported a general company concern with inflation, with problems in raising long-term funds, and with delays and lags in the granting of licenses for both new and improved old facilities. These concerns are shared by many observers.

Utility Pricing and Consumer Welfare As is generally known, the historic pattern of utility pricing in the U. S. is to favor the large commercial or industrial users with lower rates than are charged residential or small commercial customers. Within the latter group, the typical declining block rates result in lower unit costs for those who consume large amounts of electricity than for those with more modest demands. Table 16 presents data on the distribution of sales of energy units for electricity and gas to various types of customers. Table 17 gives the percentage distribution of sales among major types of users.

These data show clearly that the small users—while consuming a relatively small amount of the energy produced—account for a large part of the revenues paid to utilities. This pattern is clear throughout the time period covered by the data. For example, in 1972, residential and domestic users took 32 per cent of all electricity consumed; in the same year, they accounted for 42 per cent of revenues received by electric utilities. For residential gas customers, this pattern is even more striking. Residential use stood at only 30 per cent of all consumption, but revenues from such customers amounted to nearly one-half of total revenues.

Table 16

ENERGY SALES AND REVENUE BY TYPE OF CUSTOMER 1950-72, SELECTED YEARS

Type of Customer	1950	1955	1960	1965	1970	1971	1972
Electric Energy Generated[1]	329	547	755	1,055	1,532	1,614	1,747
Sales to Ultimate Customers	281	481	683	953	1,391	1,466	1,578
Residential or Domestic	67	125	196	281	448	479	511
Commercial and Industrial	189	336	460	635	886	927	1,002
Small Light and Power	50	78	115	202	313	334	362
Large Light and Power	139	258	345	433	573	593	640
All Other	17	20	27	37	57	60	65
Revenues from Ultimate Customer (millions of dollars)	5,086	8,020	11,516	15,158	22,066	24,725	27,921
Residential or Domestic	1,932	3,323	4,856	6,329	9,416	10,484	11,730
Commercial and Industrial	2,739	4,360	6,162	8,198	11,720	13,206	15,025
Small Light and Power	1,334	1,944	2,828	4,313	6,290	7,072	8,041
Large Light and Power	1,405	2,416	3,334	3,885	5,430	6,134	6,984
All Other	258	337	498	632	930	1,035	1,166
Natural Gas Marketed Production	6,753	10,110	13,729	17,243	23,565	24,180	24,222
Sales by Class of Service[2]	4,209	6,659	9,288	11,980	16,044	16,680	17,110
Residential	1,384	2,239	3,188	3,999	4,924	5,040	5,148
Commercial	410	603	920	1,345	2,007	2,156	2,280
Industrial	2,289	3,535	4,709	6,147	8,439	8,643	8,798
Other	126	282	470	490	674	841	883
Revenues by Class of Service (millions of dollars)	1,948	3,450	5,619	7,407	10,283	11,355	12,488
Residential	1,177	2,007	3,177	4,030	5,207	5,635	6,105
Commercial	266	424	723	1,054	1,620	1,829	2,066
Industrial	480	938	1,563	2,148	3,181	3,568	3,955
Other	26	81	153	176	274	323	362

[1] In billions of kilowatt hours.

[2] Trillions of BTU's.

Source: U. S. Department of Commerce, **Statistical Abstract of the U. S.**, 1973, p. 514.
American Gas Association, 1972 **Gas Facts.**

Moreover, the data on electrical energy consumption and revenues indicate that, when commercial customers are separated into large and small user categories, it is again the small user who makes the relatively large contribution to utility revenues. In 1972, small commercial and industrial electric consumers accounted for a larger share of revenues than they did of electrical use (29 per cent versus 23 per cent). The reverse is true for large commercial and industrial electric consumers. Their contribution to electric utility revenues was only 25 per cent while their consumption was 46 per cent.

Table 18 presents data on the rates charged to various types of customers. These data again point out that the small customers paid a higher price per unit of energy consumed over the entire time span. In fact, in 1972, the residential electric consumer paid over twice as much per kilowatt hour as the large

Table 17

ENERGY SALES AND REVENUES BY TYPE OF CUSTOMER 1950-72 SELECTED YEARS

Percentage Distribution

Type of Customer	1950	1955	1960	1965	1970	1971	1972
Electric Energy Generated							
Residential or Domestic							
Percent of Sales	23.8	26.0	28.7	29.5	32.2	32.7	32.4
Percent of Revenue	38.0	41.4	42.2	41.8	42.7	42.4	42.0
Commercial and Industrial							
Percent of Sales	67.3	70.0	67.4	66.6	63.7	63.2	63.5
Percent of Revenue	53.9	54.4	53.5	54.1	53.1	53.4	53.8
Small Light and Power							
Percent of Sales	17.8	16.2	16.8	21.2	22.5	22.8	22.9
Percent of Revenue	26.2	24.2	24.6	28.5	28.5	28.6	28.8
Large Light and Power							
Percent of Sales	49.5	53.6	50.5	45.4	41.2	40.4	40.6
Percent of Revenue	27.6	30.1	29.0	25.6	24.6	24.8	25.0
All Other							
Percent of Sales	6.1	4.2	4.0	3.9	4.1	4.1	4.1
Percent of Revenue	5.1	4.2	4.3	4.2	4.2	4.2	4.2
Natural Gas Marketed Production							
Residential							
Percent of Sales	32.9	33.6	34.3	33.4	30.7	30.2	30.1
Percent of Revenue	60.4	58.2	56.6	54.4	50.6	49.6	48.9
Commercial							
Percent of Sales	9.7	9.1	9.9	11.2	12.5	12.9	13.3
Percent of Revenue	13.7	12.3	12.9	14.2	15.8	16.1	16.5
Industrial							
Percent of Sales	54.4	53.1	50.7	51.3	52.6	51.8	51.4
Percent of Revenue	24.6	27.2	27.8	29.0	30.9	31.4	31.7
Other							
Percent of Sales	3.0	4.2	5.1	4.1	4.2	5.0	5.2
Percent of Revenue	1.3	2.4	2.7	2.4	2.7	2.8	2.9

Source: See Table 16.

commercial customer. In the same year, residential gas consumers paid a rate over two and one half times as high as the industrial consumers.

To a considerable extent these rate relationships simply reflect the differences in average consumption levels among the groups, since in the case of larger users, fixed customer and demand charges are being spread over more units. Furthermore, there are clearly some physical efficiencies in delivering energy to large users. Producing and maintaining the large and complex distribution networks which characterize residential gas or electric lines is expensive. In addition, in the case of electrical energy distribution, energy can be saved by using high voltage lines to deliver electric service to large customers. Nevertheless, it is clear that the historic pattern of U. S. utility pricing results in a quantity discount scheme which heavily favors the large users. This pricing pattern in turn tends to encourage households to adopt consumption patterns which are highly energy

Table 18

ENERGY COSTS BY TYPE OF CUSTOMER

Type of Customer	1950	1955	1960	1965	1970	1971	1972
Electric Energy Cost In Cents per Kilowatt-hour							
All Customers	1.8	1.7	1.7	1.6	1.6	1.7	1.8
Residential	2.9	2.7	2.5	2.3	2.1	2.2	2.3
Commercial	1.5	1.3	1.3	1.3	1.3	1.4	1.5
Small	2.7	2.5	2.5	2.1	2.0	2.1	2.2
Large	1.0	0.9	1.0	0.9	0.9	1.0	1.1
All Other	1.5	1.7	1.8	1.7	1.6	1.7	1.8
Gas Cost In Cents per Million BTU's							
All Classes	46	52	60	62	64	68	73
Residential	85	90	100	101	106	112	119
Commercial	65	70	79	78	81	85	91
Industrial	21	27	33	35	38	38	45
Other	21	29	33	36	41	38	41

Source: See Table 16.

dependent and industry to develop in the direction of energy intensive production technologies.

The energy crisis which has been building in this country—and indeed in the world at large for the last several years and which culminated in the Arab oil embargo last fall and winter—has caused many observers to review the basic principles of energy pricing. Much traditional regulatory thinking assumes a natural monopolist who will reap even more lavish rewards from his declining long-run marginal cost curve (LRMC) unless rates are lowered. However, it now seems unlikely that economies of scale and technical improvements in the future will be sufficient to offset inflation and high imbedded debt costs. No one doubts any longer that energy is now both an increasing cost industry and an increasingly competitive one, when substitutions among energy sources are considered. Although some state officials regulating public utilities have called on utility management to trim costs rather than expect increases in rates,[10] the presumption among most observers is that rates will have to rise. This will be necessary not only in order to attract funds for the necessary increases in capacity and environmental quality, but also in order to perform an allocative function as well.

Recently in discussions of rate making there has been a shift of emphasis from revenue and fair return to the structural and procedural aspects of rates and regulation. Proposals for improving the system's responsiveness to changes in costs include the use of projected rather than historical test years; the encouragement of research and development and long-term policy formulation; an extension of automatic adjustment clauses and interim relief policies to reduce regulatory lag, and the use of Federally-guaranteed bonds to raise capital without resorting to large rate increases.

One basic argument often advanced by environmentalists in support of a reform of utility pricing practices is that, if energy is indeed a scarce commodity that should be conserved, rewards should be given to the small user and penalties extracted from the large users. This proposed pricing scheme, the reverse of the present pricing system, is called the inverted block rate schedule. Yet, however attractive its distributional properties may appear, this scheme does not meet criteria of economic efficiency as well as do some other approaches.

Several authorities have begun to advocate replacing the present system of declining block rates with a structure which more nearly approximates marginal cost pricing since the price of energy should cover the incremental cost of providing it—if we are to avoid both an uneconomic degree of use and an unnecessary expansion of capacity. Such a structure would include peak load rate differentials for both time of day and season of the year, and fixed customer charges would be explicitly assessed. This scheme would have little impact on industrial users, and there would presumably be a tendency to redis-

[10] See for example, W. G. Rosenberg, "Rates, Consumer Pressure, and Finance," *P.U.F.*, 1/31/74.

tribute the costs of electric use toward the more affluent residential users, whose large consumption tends to contribute heavily to a system's peaks. This proposal is further modified by adding the stipulation that these costs should include provisions for damage to the environment. For instance, fees should be collected for the burning of high sulfur coal in an electric utility. The fees would be collected by a public agency and used to clean up the environment. While I realize that the correct measurement of all these costs is not a simple matter, there seems little doubt that many rate schedules could be made more reflective of incremental costs than they are at present.

Exactly which of these routes (or still some others) should be followed to reform utility practices is a matter of continuing debate. But, in the meantime, it is clear that we as a society must give careful consideration to the way in which we are to allocate our scarce energy resources. Moreover, we should all accept the fact that this growing scarcity will mean higher prices for energy relative to most other items on which consumers can spend their income. In the long-run, it is better to permit these increases in real costs to be passed on to final users—rather than pretend that we can—somehow—escape the burden. Only in this way will consumer welfare be truly served in the years ahead.